

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to the Feeding of Articles in Wrapping Machines

5 We, ROSE BROTHERS (GAINSBOROUGH) LIMITED, a British Company, of Albion Works, Gainsborough, in the County of Lincoln, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to wrapping machines of the kind in which the articles to be wrapped, e.g., sweets, are ejected from separate pockets in an intermittently rotatable pocketed feed wheel to the wrapping elements, usually by a reciprocating pusher passing through each 15 pocket in turn at the ejecting station, a wrapper being fed into the path of movement of each sweet towards the wrapping elements so as to be carried with the sweet into the wrapping elements as it is ejected by the pusher.

20 It is now well known to use a vibratory feed mechanism for feeding the articles from a bulk supply to the surface of the feed wheel containing the pockets, various mechanisms being employed, e.g., as described in British Specification No. 729,223, for ensuring that the 25 articles are properly positioned in the pockets. When using such automatic feeding mechanisms, however, the speed of operation of the wrapping machine is determined by the speed at which the feeding mechanism will consistently feed the articles to the pockets, and such feeding speed is generally not as high as the speed at which the wrapping machine is capable of operating.

30 An object of the invention is to provide a wrapping machine in which the feeding mechanism is capable of operating at a speed adequate to the needs of the wrapping machine.

40 According to the present invention, a device for feeding articles in wrapping machines of the kind referred to, comprises a number of auxiliary pocketed feed members the pockets of which are adapted to receive articles from

a bulk supply, said feed members being intermittently movable in timed relationship with the movement of the feed wheel to bring their pockets successively into register with pockets in the feed wheel during the periods of dwell, so as to allow the articles to pass or be transferred from the pockets of the auxiliary feed members to those of the feed wheel, whereby the pockets of the feed wheel are progressively filled by the transfer of articles from the pockets of the auxiliary feed members.

55 The auxiliary feed members are preferably in the form of pocketed wheels similar to the pocketed feed wheel, and in a preferred construction, two auxiliary wheels are arranged to feed one feed wheel so that each auxiliary wheel only needs to move a peripheral distance equal to the circumferential pitch of its pockets during the time that the feed wheel moves (in two movements) a distance equal to twice the pitch of its pockets.

65 Conveniently, the pockets in both feed and auxiliary wheels are open-ended, extending radially inwards from the periphery in each case. In such a case, there are provided means associated with each auxiliary feed wheel for transferring the articles from successive pockets of that feed wheel to pockets of the main feed wheel during the periods of dwell, the transfer positions being the points where the axes of the pockets of the feed and auxiliary wheels lie on a common line joining the axes of rotation of the two wheels. The transfer may then be effected by an oscillating member swinging about an axis so disposed that the common line referred to above is approximately tangential to the path of movement of the oscillating member through the two pockets at the transfer position.

80 The feeding of the articles to the pockets of each of the auxiliary wheels is conveniently carried out as described in the specification mentioned above.

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In the above manner, articles may be fed automatically without reducing the wrapping capacity of the machine.

By way of example, the invention will now be described in greater detail with reference to the accompanying diagrammatic drawings, in which:—

Figure 1 is a plan illustrating a device for feeding sweets in a sweet-wrapping machine; and

Figure 2 is a sectional view on the line 2—2 in Figure 1.

A pair of auxiliary feed wheels 11 and 12, each formed with a series of open-ended pockets 13, are each fed with sweets 14 in the manner described in the specification mentioned above, the sweets 14 being transferred alternately from the pockets 13 in the two wheels 11 and 12 to alternate pockets 16 in a main feed wheel 17. The sweets 14 are then removed successively from the pockets 16 of the wheel 17 in known manner by a reciprocating pusher 18 passing through each pocket in turn to cause the sweet in that pocket to be transferred with a previously fed wrapper 19 to a waiting pocket of a mould wheel 21 in which the completion of the wrapping operation takes place.

The transferring of the sweets 14 from the wheels 11 and 12 is performed by a two-armed transfer member 22, pivoted at 23, and formed with two transfer fingers 24 and 26, the member 22 being movable about its pivot by a rotatable cam 27 arranged to engage a roller 28 carried by an arm 29 extending from the member 22.

The auxiliary feed wheels 11 and 12 are each driven intermittently in timed relationship with the intermittent movement of the main feed wheel 17 so as alternately to bring their successive pockets 13 into register with alternate pockets 16 of the wheel 17, the latter making two stepwise movements each equal to the circumferential pitch of its pockets for each stepwise movement of the auxiliary wheels 11 and 12 equal to the circumferential pitch of their pockets. Similarly, the transfer member 22 makes one complete oscillation, to transfer a sweet 14 from each wheel 11 and 12 alternately, during the two stepwise movements of the wheel 17.

Thus, assuming the machine to be in operation, Figure 1 shows a sweet 14 at the completion of its transfer from the wheel 11 to the pocket 16 (designated A) of the main feed wheel 17, which, with the wheel 11, at the moment is dwelling. In the meantime, the wheel 12 has moved to bring a pocket 13 into register with the pocket 16 (designated B) of the wheel 17 in readiness for the transfer of the sweet 14 into the next pocket F by the finger 26. During such period of dwell of the wheel 17, the pusher 18 has moved to transfer a sweet 14 to the mould wheel 21.

As soon as the transfer into the pocket A is completed, the cam 27 causes a slight rocking of the transfer member 22 to move the finger 24 clear of the periphery of the wheel 17 which then makes a stepwise movement to bring the empty pocket B to the first transfer position, i.e., the position previously occupied by the pocket A, and the empty pocket F to the second transfer position, i.e., the position previously occupied by the pocket B, that pocket having been filled at the first transfer position. The cam 27 then causes further rocking of the member 22 to cause the finger 26 to transfer a sweet to the pocket F, the wheel 12 dwelling meantime. Such movement of the member 22 causes the finger 24 to move clear of the adjacent pocket 13 and allows the wheel 11 to make its next stepwise movement to bring a further pocket 13 to the first transfer position. The cam 27 then causes the member 22 to rock slightly to move the finger 26 clear of the periphery of the wheel 17 to allow that wheel to make its next movement to bring the empty pocket C to the first transfer position and the pocket G (previously filled) to the second transfer position. The cam 27 then causes the member 22 to complete its cycle during which the finger 24 transfers a sweet to the pocket C, the wheel 12 meanwhile having moved to bring a further pocket 13 to the second transfer position.

The cycle is then repeated during which the empty pocket H is moved to the second transfer position and the empty pocket D to the first transfer position, and so on, alternate pockets 16 of the wheel 17 thus being filled alternately from the wheels 11 and 12, while the sweets 14 in successive pockets 16 are ejected by the pusher 18.

WHAT WE CLAIM IS:—

1. A device for feeding articles in wrapping machines of the kind referred to, comprising a number of auxiliary pocketed feed members the pockets of which are adapted to receive articles from a bulk supply said feed members being intermittently movable in timed relationship with the movement of the feed wheel to bring their pockets successively into register with pockets in the feed wheel during the periods of dwell, so as to allow the articles to pass or be transferred from the pockets of the auxiliary feed members to those of the feed wheel, whereby the pockets of the feed wheel are progressively filled by the transfer of articles from the pockets of the auxiliary feed members.

2. A device as in Claim 1, wherein the auxiliary feed members are in the form of pocketed wheels similar to the pocketed feed wheel.

3. A device as in Claim 2, wherein the pockets in both the feed and auxiliary wheels are open-ended, extending radially inwardly, and means are provided in association with each auxiliary feed member for transferring the

articles from successive pockets of that feed wheel to pockets of the main feed wheel during the periods of dwell.

- 5 4. A device as in Claim 3, wherein the transfer positions are at the points where the axes of the pockets of the feed and auxiliary wheels lie on a common line joining the axes of rotation of the two wheels, and the transfer means comprises an oscillating member swinging about an axis so disposed that the common line is approximately tangential to the path of movement of the oscillating member through the two pockets at the transfer position.

5. A device as in any of Claims 2 to 4, wherein the articles are fed to the pockets of the auxiliary feed wheels by feeding devices according to British Specification No. 729,223. 15

6. A device for feeding articles in wrapping machines substantially as described.

7. Sweet-wrapping apparatus equipped with a sweet-feeding device substantially as described with reference to the accompanying drawings. 20

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PROVISIONAL SPECIFICATION

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25 We, ROSE BROTHERS (GAINSBOROUGH) LIMITED, a British Company, of Albion Works, Gainsborough, in the County of Lincoln, do hereby declare this invention to be described in the following statement:—

30 This invention relates to wrapping machines of the kind in which the articles to be wrapped, e.g., sweets, are ejected from separate pockets in an intermittently rotatable pocketed feed wheel to the wrapping elements, usually by a reciprocating pusher passing through each 35 pocket in turn at the ejecting station, a wrapper being fed into the path of movement of each sweet towards the wrapping elements so as to be carried with the sweet into the wrapping elements as it is ejected by the pusher.

40 It is now well known to use a vibratory feed mechanism for feeding the articles from a bulk supply to the surface of the feed wheel containing the pockets, various mechanisms being employed, e.g. as described in Specification 45 No. 729,223, for ensuring that the articles are properly positioned in the pockets. When using such automatic feeding mechanisms, however, the speed of operation of the wrapping machine is determined by the speed at which 50 the feeding mechanism will consistently feed the articles to the pockets, and such feeding speed is generally not as high as the speed at which the wrapping machine is capable of operating.

55 An object of the invention is to provide a wrapping machine in which the feeding mechanism is capable of operating at a speed adequate to the needs of the wrapping machine.

60 According to the present invention, a device for feeding articles in wrapping machines of the kind referred to, comprises a number of auxiliary pocketed feed members intermittently movable in timed relationship with the movement of the feed wheel to bring their pockets successively into register with pockets in the 65 feed wheel during the periods of dwell, the pockets of the auxiliary feed members receiving the articles from a bulk supply, means associated with each auxiliary feed member for

transferring the articles from successive pockets of that feed member to pockets of the feed wheel during the periods of dwell, the transferring means being so arranged and operated that the pockets of the feed wheel are progressively filled by the transfer of articles 75 from the pockets of the auxiliary feed members.

The auxiliary feed members are preferably in the form of pocketed wheels similar to the pocketed feed wheel, and in a preferred construction, two auxiliary wheels are arranged to feed one feed wheel so that each auxiliary wheel only needs to move a peripheral distance equal to the circumferential pitch of its pockets during the time that the feed wheel 85 moves a distance equal to twice the pitch of its pockets. Conveniently, the pockets are arranged at the same pitch in both auxiliary and feed wheels, in which case, it will be seen that (assuming the same number of pockets in each wheel) the feed wheel may travel at twice the speed of the auxiliary wheels. The auxiliary wheels may, and preferably do, have a larger number of pockets than the feed wheel, however, which again facilitates the feeding of the articles to the pockets of the auxiliary wheels because of the correspondingly smaller rate of revolution. 90

Conveniently, the pockets in both feed and auxiliary wheels are open-ended, extending radially inwards from the periphery in each case. In such a case, the transfer positions are the points where the axes of the pockets of the feed and auxiliary wheels lie on a common line joining the axes of rotation of the two wheels. 105 The transfer may then be effected by an oscillating member swinging about an axis approximately tangential to the mean radius of the pocket of the auxiliary wheel lying at the transfer position. 110

The feeding of the articles to the pockets of each of the auxiliary wheels is conveniently carried out as described in the specification mentioned above.

In the above manner, articles may be fed 115

automatically without reducing the wrapping
capacity of the machine.

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